

systems in the 1.6/2.4 GHz bands. See NPRM ¶ 40 n.72. Some of these systems have aspirations for worldwide service. If the Commission were to license only regional systems to operate in this global MSS spectrum, non-U.S. systems offering global coverage could become the MSS systems of choice for many potential subscribers.

The limited amount of global spectrum potentially usable by the Big LEO MSS systems further justifies a global coverage requirement for the LEO MSS Bands. Regional and geographically limited systems should be licensed to operate in spectrum that is not suitable for systems offering global services.

Many of the most significant benefits associated with Big LEO MSS systems are inextricably linked to their capability for global service. Absent a global service requirement, the potential for creation of a low-cost Global Information Infrastructure and for ubiquitous worldwide coverage of both developed and developing countries could well disappear.

To enhance the usefulness of the Commission's proposed rule, Motorola recommends that the Commission clarify that this requirement is meant to be a "global service" standard and not merely a "global coverage" requirement as its current formulation might suggest. The visibility of at least one satellite of an MSS system from any point on the globe will be of little utility if that satellite is incapable of providing service to that point because, for example, the elevation angle is too low for the design specifications of the particular system. Specifically, under proposed Rule 25.143(b)(2)(ii), only one satellite of an

MSS system need be visible above the horizon at a uniform elevation angle of  $5^{\circ}$  for at least 18 hours each day at latitudes less than  $80^{\circ}$ . This requirement may not be sufficient to ensure that global service can be provided from any particular system on the surface of the Earth.

Instead of applying an arbitrary and uniform  $5^{\circ}$  elevation angle for the purpose of determining coverage, the Commission should use the minimum elevation angle necessary for the satellites of each system to provide MSS service, provided that this angle is not less than  $5^{\circ}$ . This minimum angle will differ for each proposed system. Each applicant should be required to certify in its application, or by amendment, the minimum elevation angle at which its system can provide service, and should also be required to provide technical support for this certification.

Similarly, the capability of a LEO MSS system to provide global coverage is irrelevant if it, in fact, lacks the ground segment infrastructure necessary to provide service outside the United States. To avoid this from happening, the Commission should require each applicant to certify that it will establish or arrange for the establishment of the ground segment infrastructure (gateways and earth stations) necessary to provide service to countries representing a minimum percentage of the population and surface of the globe by the last milestone date in its license (i.e., six years from grant). The installment of such an infrastructure should, in turn, become another implementation milestone for the licensed systems.

In light of these suggestions, Motorola recommends that the proposed global service rule should be rephrased as follows:

(ii) that the proposed system is capable of providing Mobile Satellite Services to all areas of the world, with the exception of the polar regions (above 80° latitude), at least 75% of every 24-hour period, i.e., that at least one satellite will be visible above the horizon from any point in the world other than the polar regions for at least 18 hours a day at the design elevation angle required for the system to provide Mobile Satellite Services to that point, provided that this angle must be at least 5°;

(iii) that each applicant certifies that it shall establish, or arrange for the establishment of, the ground segment infrastructure necessary to permit provision of Mobile Satellite Service in countries representing at least 75% of the surface area and population of the world within six years of the grant of its space station license;

(vi) For the purpose of demonstrating that it is qualified under this paragraph, each applicant shall certify in its application the minimum elevation angle at which its system can provide Mobile Satellite Service, and shall submit satisfactory technical documentation to support this certification.

## 2. Continuous U.S. Service Requirement

Motorola agrees with the requirement of 24-hour coverage of the entire United States, and also recommends that the Commission make clear that this rule too should be a service requirement, and not merely a coverage standard. Motorola further recommends that this rule include MSS service to all U.S. territories and possessions, such as Guam, American Samoa, the Commonwealth of Puerto Rico and the U.S. Virgin Islands. The inhabitants of these offshore areas are as entitled to the benefits of LEO MSS systems as the citizens of any of the fifty states, and may have a special need for satellite service owing to their distance from the U.S. mainland and relatively low

telephone penetration rates. Indeed, the Commission has repeatedly emphasized the importance of satellite service to offshore domestic points. See, e.g., 47 C.F.R. § 25.114(c)(15) (1993).

Motorola accordingly recommends a rephrasing of proposed Rule 25.143(b)(2)(iii) to read as follows:

(iv) that the proposed system is capable of providing Mobile Satellite Service on a continuous basis throughout the fifty states of the U.S., and all U.S. territories and possessions including Guam, American Samoa, the Commonwealth of Puerto Rico and the U.S. Virgin Islands, i.e., that at least one satellite will be visible above the horizon from any point in the foregoing territory for 24 hours a day at the design elevation angle required for the system to provide Mobile Satellite Service to that point, provided that this angle is at least 5°;

### 3. Low-Earth Orbit Satellite Architecture Requirement

Motorola agrees with the Commission that a requirement of LEO satellite architecture is necessary to ensure that the public is provided with all of the benefits associated with the use of the LEO MSS Bands. Motorola, therefore, fully concurs with the Commission's conclusion that "a LEO industry may be uniquely positioned to foster social and economic benefits in the United States and throughout the world," NPRM ¶ 21, and believes that this conclusion and the attendant requirement of a LEO architecture are fully supported by the record in this proceeding. LEO satellites are clearly better suited to provide global MSS service to handheld terminals. Geostationary satellites either are incapable of delivering global coverage because of their fixed footprints or can deliver such coverage at an incremental cost that is substantially higher than the

incremental cost of a LEO satellite system covering the world.<sup>16/</sup> Geostationary satellites, such as the system of AMSC Subsidiary Corporation ("AMSC"), also require the use of larger antennas and heavier terminals to receive an adequate signal. LEO satellites are better suited to provide MSS to all fifty states, territories and possessions of the United States. Geostationary systems are constrained by their fixed position over the equator and their beam configurations to less advantageous elevation angles to higher latitudes.<sup>17/</sup>

Satellites in low-Earth orbit have inherent advantages over geostationary ("GSO") satellites with respect to the provision of real-time voice services to handheld terminals. Owing to the distance between geostationary satellites and users and the resulting power requirements, geostationary systems are not well-suited to provide adequate service to portable handheld devices. Indeed, AMSC does not propose to provide service to handheld terminals with its first-generation system.<sup>18/</sup> Therefore, at least for the foreseeable future, use of the LEO MSS Bands by a geostationary system would forfeit one of the most

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<sup>16/</sup> See, e.g., Motorola's Consolidated Petition to Dismiss and/or Deny and Comments on the Applications of AMSC Subsidiary Corp., File Nos. 15-DSS-MP-91, 16-DSS-MP-91, et al., at Table 3, showing that AMSC does not have global coverage capability.

<sup>17/</sup> See, e.g., Motorola Consolidated Petitions to Deny and/or Dismiss at Tables 4 and 5, showing that AMSC does not have capability for continuous "mobile" service, much less continuous "handheld" service, in the United States.

<sup>18/</sup> See, e.g., Applications of AMSC Subsidiary Corporation to Integrate Frequencies from the RDSS Uplink Band into the U.S. MSS System, File Nos. 15-DSS-MP-91, 16-DSS-MP-91, Consolidated Opposition to Petitions to Deny of AMSC Subsidiary Corporation, at 16 n.28, Technical Appendix at 25-26 (filed Jun. 31, 1992).

important benefits that LEO MSS technology makes possible -- ubiquitous service to and from handheld terminals.<sup>19/</sup> Big LEO satellite systems also can maintain better link margins (and resulting higher quality service) than geostationary systems due to shorter transmission distances.

Because of the inherent geographical limitations of geostationary systems, allowing use of the LEO MSS Bands by such systems would perpetuate the "uneven state of communications development" over the world, a problem of "tragic" proportions that the Commission's international policies are attempting to mitigate. As Chairman Hundt observed in his Buenos Aires address, most satellite systems "serve the Northern Hemisphere and extend East-West. The Southern Hemisphere is grossly underserved."<sup>20/</sup> LEO satellite systems will help alleviate this problem.

In addition, Big LEO MSS systems would be able to utilize more fully the global MSS allocations decided upon at the 1992 World Administrative Radio Conference ("WARC-92"). As Motorola has previously noted, there are limited opportunities for worldwide allocations for global MSS systems outside the LEO MSS Bands.<sup>21/</sup> The significant achievement of uniform inter-

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<sup>19/</sup> Even though AMSC claims that its second-generation system may be capable of providing service to handheld terminals, this contention and the adequacy of the proposed system seem highly questionable, and implementation of the service would be relegated to the remote future even in the best of circumstances.

<sup>20/</sup> See March 22, 1994 Hundt Address.

<sup>21/</sup> See Motorola's Consolidated Response to the Applications of AMSC Corp. et al. (filed Mar. 27, 1992), at 9. On the other hand, the spectrum available for the provision of domestic MSS is ample -- about 30 MHz in the upper-L band.

national allocations in the LEO MSS Bands was, in large part, the result of a considerable effort expended by the United States. The Commission should not let this achievement be wasted by licensing in these bands regional geostationary systems that will very likely be incapable of availing themselves of this uniform international allocation. Indeed, AMSC is already authorized to use ample spectrum in the 1.5/1.6 GHz bands for the provision of domestic MSS. To the extent that this applicant can, in the future, justify the need for additional spectrum, it could be accommodated in other bands without squandering these worldwide MSS allocations.

As an emerging technology, Big LEO MSS systems are entitled to special consideration. In 1983, Congress amended the Communications Act to establish a strong statutory presumption that the provision of new technologies and services should be encouraged and is consistent with the public interest. 47 U.S.C. § 157. In accordance with this statutory mandate, the Commission has considered the public interest in accommodating new technologies important enough to warrant relocation of incumbent users. See Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, ET-Docket No. 92-9, Notice of Proposed Rulemaking, 7 FCC Rcd. 1542, 1543 (1992) ("we believe it . . . is in the best interest of the United States to make spectrum available for the development of new services and technology"). First Report and Order and Third Notice of Proposed Rulemaking, 7 FCC Rcd. 6886 (1992); Second Report and Order, 8 FCC Rcd. 6495 (1993); Third Report and Order and Memorandum Opinion and Order, 8 FCC Rcd. 6589 (1993)

(Commission decides to relocate fixed microwave facilities in order to foster the introduction of emerging technologies services in the 1.85-2.20 GHz band).<sup>22/</sup> Surely these same policies now warrant the exclusion of an existing MSS licensee to make room for the emerging LEO MSS industry.

#### B. Financial Qualification Requirements

Motorola supports the Commission's proposed financial qualification standards. Stringent financial qualifications are necessary to ensure that the technically qualified MSS applicants are also financially capable of promptly delivering the benefits which flow from LEO MSS systems and that the valuable global MSS spectrum does not lie fallow while the prospective operators are engaged in prolonged efforts of uncertain success to secure financing for their systems. See Licensing Space Stations in the Domestic Fixed-Satellite Service, 58 Rad. Reg. 2d (P&F) 1267, 1270 ("1985 Domsat Order").

Motorola has two specific suggestions, however, for reinforcing and clarifying the Commission's proposed financial standards. First, "first year operational costs" for LEO MSS systems should be calculated for the year following the launch of

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<sup>22/</sup> See also An Inquiry Relative to the Future Use of the Frequency Band 806-960 MHz; and Amendment of Parts 2, 18, 21, 73, 74, 89, 91, and 93 of the Rules Relative to Operations in the Land Mobile Service Between 806 and 960 MHz, Docket No. 18262, First Report and Order and Second Notice of Inquiry, 35 Fed. Reg. 8644, 8645 (1970) ("In our view it is essential in the public interest that every encouragement be given to the development of new techniques in the efficient use of bands allocated for 'private' and mobile systems"); Second Report and Order, 46 F.C.C.2d 752 (1974), reconsidered, Memorandum Opinion and Order, 51 F.C.C.2d 945 (1975), aff'd sub nom. NARUC v. FCC, 525 F.2d 630 (D.C. Cir.), cert. denied, 425 U.S. 992 (1976).



the last satellite in the constellation, rather than after the first satellite launch as proposed in the rules.<sup>23/</sup> See NPRM ¶ 27 n.57. In light of the relatively large number of satellites required by global LEO MSS systems and the length of time required to launch a full constellation of satellites, the ability to finance the operational costs of one satellite for one year after the first satellite is launched is not sufficient to guarantee that the applicant will be able to meet the costs of operating its full constellation. Motorola, therefore, recommends that Big LEO MSS applicants should be required to provide evidence of current assets, debt or equity financing sufficient to meet the estimated costs of constructing and launching all planned satellites and operating the entire constellation for one year after all the satellites composing the full constellation are launched.

Second, Motorola requests a clarification of the Commission's statement that applicants provide evidence of "uncommitted current assets" in order to demonstrate their financial qualifications. See NPRM ¶ 27. The rule governing financial qualifications for domestic FSS applicants, from which the Commission's proposal was fashioned, clearly contemplates that applicants must show sufficient "current assets," and does not require that such current assets also remain "uncommitted." See 47 C.F.R. § 25.140(d)(1) (1993). Indeed, the requirement of "uncommitted capital assets" had initially been proposed in the

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<sup>23/</sup> By their nature, LEO systems can only become fully operational, and able to generate revenues, once the entire constellation is in place.

Domsat proceeding, but was expressly abandoned by the Commission in the 1985 Domsat Order. At that time, commenting parties such as GTE argued that "companies will not be willing or able to set aside specific assets for any project more than three years in advance," and that "a demonstration of financial capability based on the availability of internal or external funds plus a general management commitment to the program should be sufficient." 1985 Domsat Order, 58 Rad. Reg. 2d (P&F) at 1272. On the basis of these comments, the Commission decided that "it will be more practical simply to require applicants to demonstrate sufficient current assets or operating income to cover the cost of the proposed system." Id. The Commission further explained that "[c]urrent assets -- which includes cash, inventory, and accounts receivable -- provides a general measure of a company's ability to raise funds on the basis of its on-going operations." Id. at 1272-73.

The reasoning of the 1985 Domsat Order is equally applicable here. Indeed, since the Commission has explicitly proposed the same financial qualification standard for the LEO MSS Bands as for the domestic FSS, see proposed § 25.143(b)(3), the Commission should make clear that Big LEO MSS applicants must only demonstrate sufficient current assets, without requiring that such assets be set aside or be "uncommitted" to meet construction and first year operating costs for the entire system.

IV. **THE COMMISSION HAS AMPLE AUTHORITY TO PRESCRIBE THE PROPOSED QUALIFICATION REQUIREMENTS IN THIS PROCEEDING**

The Commission has ample authority to prescribe the proposed technical and financial qualification rules, with the modifications recommended by Motorola, even if these qualification standards require non-conforming applicants to amend their applications. The Communications Act gives the Commission broad rulemaking power in recognition of the fact that "the Commission, like other agencies, deals in the public interest." United States v. Storer, 351 U.S. 192, 203 (1956). As the Supreme Court recognized in 1956, this broad power is all the more necessary because the Commission's "authority covers new and rapidly developing fields." Id. at 203; see also FCC v. Pottsville Broadcasting Co., 309 U.S. 134, 138 (1940).

It is a well-settled rule of administrative law that the Commission has broad discretion to proceed by rulemaking as fairly as by adjudication. See, e.g., Mobil Oil Exploration & Producing S.E., Inc. v. United Distrib. Cos., 498 U.S. 211, 228-29 (1991) (it is axiomatic under federal administrative law that the agency has the power to resolve general factual issues as fairly through rulemaking as by considering specific evidence, when the questions under consideration are not unique to the particular case).<sup>24/</sup>

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<sup>24/</sup> See also Heckler v. Campbell, 461 U.S. 458, 467-68 (1983) ("[T]he court has recognized that even where an agency's enabling statute expressly requires it to hold a hearing, the agency may rely on its rulemaking authority to determine issues that do not require case-by-case consideration").

A. The Commission is Authorized to Prescribe Eligibility Requirements by Rulemaking and Use Them to Evaluate Pending Applications

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The Commission's power to proceed by rulemaking is not impaired by the pendency of applications to provide a new service, even if these applications could be affected by, or have to be amended in light of, the outcome of the rulemaking proceeding. Indeed, in Storer the Supreme Court upheld the Commission's power to proceed by rulemaking and without a hearing even though an application that was pending had to be dismissed as a result of the rules adopted in that proceeding. See Storer, 351 U.S. at 197. The Commission has exercised its discretion to proceed by rulemaking in many cases where applications that would be affected by the new rules were pending. As the Commission itself has recognized in the RDSS Licensing Order, "parallel rulemaking and processing of applications has often been employed by the Commission and has been affirmed by the courts."

Amendment of Commission's Rules to Allocate for, and to Establish Other Rules and Policies Pertaining to a Radiodetermination Satellite Service, 104 F.C.C.2d 650, 652 (1986) ("RDSS Order").

In Hispanic Info. & Telecommunications Network v. FCC, 865 F.2d 1289 (D.C. Cir. 1989), for example, the court upheld the Commission's decision to deny without a hearing a non-local application for Instructional Fixed Television Service on the basis of eligibility rules that disqualified non-local applications for such service, even though the disqualifying rules were promulgated and proposed subsequent to the filing of the application. The court explained that "[t]he filing of an

application creat[ed] no vested right to a hearing; if the substantive standards change so that the applicant is no longer qualified, the application may be dismissed." Id. at 1294-95. See also RDSS Order, 104 F.C.C.2d at 654 (Commission adopted random access TDM operations as the baseline and would consider pending applications that were incompatible with this design only if it could be shown that proposed design was superior); Application of Satellite Television Corporation for Authority to Construct an Experimental Direct Broadcast Satellite System, 91 F.C.C.2d 953, 959-60 (1982) (in the interest of efficiency, the Commission would consider policy issues in a rulemaking proceeding while applications were pending).

B. The Need to Amend Some or All of the MSS Applications in Order to Conform Them to the Commission's Proposed Qualification Rules Does Not Give Rise to any Requirement for a Hearing

The fact that some or all of the pending applications currently do not conform to the Commission's proposed requirements does not give rise to the Ashbacker requirement of a comparative hearing. Ashbacker requires a comparative hearing only in situations of mutual exclusivity -- specifically in situations where the grant of an application would result de facto in the denial of all other pending applications. See Ashbacker Radio Corp. v. FCC, 326 U.S. 327 (1945); Aeronautical Radio, Inc. v. FCC, 928 F.2d 428, 438 (D.C. Cir. 1991) ("ARINC"). For Ashbacker to be relevant, this causal link between grant of an application and denial of another application is absolutely necessary. See ARINC, 928 F.2d at 438. Here, this requisite

link does not exist. Any possible denial of an application would not be the consequence of a grant of any other application; rather, any such denial would result from the failure of the applicant to conform to the eligibility thresholds prescribed by the Commission.<sup>25/</sup> See id.

As demonstrated above, the proposed eligibility rules are required by the public interest and are amply based on the record compiled in this rulemaking proceeding. For example, the Commission may conclude on the basis of this record that the technical capability of the LEO architecture for world-wide service is an important public benefit and the single most important advantage of LEO MSS systems over other mobile technologies. In light of this conclusion, the requirement of global service and the attendant requirement of a LEO architecture are necessary to secure for the public these benefits. Allowing geographically limited coverage, conversely, would be an inefficient use of global MSS spectrum and would run counter to the public interest.

The Commission proposes to give all applicants with non-conforming systems the opportunity to amend their

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<sup>25/</sup> See also Establishment of Domestic Communications-Satellite Facilities by Non-Governmental Entities, Second Report and Order, 35 F.C.C.2d at 850. There, the Commission decided that it was unwise to attempt to choose one or more systems through comparative hearings. However, the Commission clarified that multiple entry "cannot be 'open' in the sense that it is without any restrictions or limitations. Pursuant to statute we must require showings of financial, technical and other qualification and make the requisite finding that a grant of the particular proposal will serve the public interest, convenience and necessity." Accordingly, the Commission gave applicants 30 days to conform their applications to the conditions imposed in the Second Report and Order.

applications to conform them to its proposed new qualification requirements. This opportunity constitutes one more factor making the new qualification standards a "legitimate eligibility requirement for prospective applicants." ARINC, 928 F.2d at 451, citing Telocator Network v. FCC, 691 F.2d 525, 529-30, 552 (D.C. Cir. 1982). See also Amendment of Part 21 (now part 22) of the Rules, 77 F.C.C.2d 201, 214 (1980) ("[T]he approval of one technical coordination method does not preclude the grant of any particular application because all parties will be free to amend their applications to comply with the technical plan."). The Commission may impose such eligibility requirements and reject applications that do not satisfy them without need for a comparative hearing. See Telocator, 691 F.2d at 551-52 (Commission did not exceed its rulemaking authority, nor did it violate the Ashbacker doctrine, in holding that applications not conforming to certain technical specifications would be rejected without a hearing).

The Commission may even reject applications that, by the applicant's own admission, fail to meet its eligibility requirements without any hearing, comparative or otherwise. See Storer, 351 U.S. at 201 (upholding Commission's contention that "the right to a hearing does not exist where an applicant admittedly does not meet [the Commission-prescribed] standards as there would be no facts to ascertain"). Here, there would be no facts to ascertain if, for example, a proposed system does not satisfy the requirement of a non-geostationary architecture.

C.    The Assignment to AMSC of a Substantial Amount  
of Spectrum on a Monopoly Basis Provides  
Additional Grounds for Its Disqualification

Even if AMSC were to meet the technical qualification requirements proposed by the Commission, its disqualification from this proceeding would be justified on the ground that AMSC already is licensed to provide MSS in a portion of the 1.5/1.6 GHz band on an exclusive basis in the U.S. The Commission has previously employed such considerations as a basis for disqualification of pending applications. Indeed, when the Commission excluded Omninet from the RDSS bands, it considered its status as an applicant for provision of service in nearby spectrum as sufficient ground for such an exclusion. See RDSS Order, 104 F.C.C.2d at 658-61 ¶¶ 14-19. The disqualification of AMSC from this proceeding is even more appropriate here, since it is already licensed to provide MSS in another part of the L-band.

Encouragement of competition has been considered a valid and relevant factor (although not the only one) for safeguarding the public interest. See FCC v. RCA Communications, Inc., 346 U.S. 86, 93 (1953); ITT World Communications, Inc. v. FCC, 725 F.2d 732, 747 n.33 (D.C. Cir. 1984) (although not an end in itself, competition is important as a means of furthering the public interest). For example, the Commission has applied pro-competition considerations in its Second Report and Order in the Domsat proceedings to reject proposals by entities that enjoyed dominance in certain markets. In that connection, the Commission stated:

[T]he incentive for competitive entry by  
financially responsible satellite-system



entrepreneurs to develop specialized markets must be meaningful and not just token. This requires that we take appropriate measures toward the end that a reasonable opportunity for effective entry is not defeated or weakened by AT&T, either directly or through its existing or future relationships with Comsat.

Establishment of Domestic Communications-Satellite Facilities by Non-Governmental Entities, Second Report and Order, 35 F.C.C.2d at 847. AMSC already possesses authority to provide MSS exclusively in the U.S. in a portion of the L-band. Its disqualification in this proceeding would avoid the strengthening of its spectrum monopoly and would allow the entry of several potential MSS competitors.

V. SUBJECT TO CERTAIN CLARIFICATIONS, THE PROPOSED SPECTRUM SHARING PLAN IS IN THE PUBLIC INTEREST

Subject to clarification of a few points by the Commission, the proposed band sharing plan appears to further the public interest by enabling all qualified Big LEO MSS applicants to receive licenses on an expedited basis.

A. Motorola is Generally Supportive of the Commission's Proposed Band Sharing Plan

Motorola accepts the Commission's proposed band sharing plan subject to a few critical clarifications and/or modifications. The Commission's plan appears to takes into consideration the interests of all of the Big LEO MSS applicants in order to enable them to begin commercial operations. Motorola further recognizes that the Commission's plan will require compromises by all of the applicants. Motorola is prepared

to accept the Commission's plan and to make the necessary compromises in order to expedite the issuance of licenses. Motorola cannot, however, accept any further reduction in its assigned spectrum and still have an economically viable system. Indeed, the Commission appears to have recognized this reality in its Notice. See NPRM ¶ 31.

Motorola must dispel as totally inaccurate the inference drawn by the Commission that "as little as 3.3 MHz may be sufficient to accommodate Motorola." NPRM ¶ 31 (footnote omitted). The Commission explains that the Motorola/LQSS proposal contemplates equally dividing the 16.5 MHz among fully operational systems. On the assumption of five such systems, the Commission infers that one fifth of the spectrum would be sufficient for Motorola's purposes.

In the real world, the prospect of all five Big LEO MSS applicants' becoming fully operational is highly unlikely. Motorola has repeatedly stated in its pleadings to the Commission that there is simply not enough capital available from the international finance community for five Big LEO MSS systems. See, e.g., Comments of Motorola in Petitions of Constellation Communications, Inc., TRW, Inc., American Mobile Satellite Corporation and Ellipsat Corporation for Amendment of Parts 2, 22 and 25 of the Commission's Rules to Allocate Spectrum for, and to Establish Other Policies Relating to Satellite Systems in the RDSS Bands, RM-7806, RM-7771, RM-7773, RM-7805 (Oct. 16, 1991), at 20 ("it is evident that the financial community cannot support all of the proposed systems even if all of them could be accommodated technologically"). This same view is supported by

the Department of Transportation ("DOT"). In a recent study ("DOT Study," attached hereto as Appendix 7), the DOT's Office of Commercial Space Transportation estimated the demand for LEO satellite launches over the period 1994-2005 on the basis of at most two deployed Big LEO MSS systems. The DOT Study reasoned that, "[d]espite the number and range of [LEO] systems, it seems clear that the market cannot support all of the proposed systems . . . , and that some proposals may never mature into deployed systems." DOT Study at 1.

The joint proposal of Motorola and LQSS reflected a business decision on the part of both companies. This business decision was premised on an assessment that at most two or three systems would be fully operational in the LEO MSS Bands, not on the assumption of five such systems. It would thus be incorrect to conclude from the fact that Motorola supported a "start big, cut back" plan that Motorola believes it could have a viable system with less than 5.15 MHz of L-band spectrum.

B. The Commission's Proposed Licensing of Only One FDMA/TDMA System in the Upper Portion of the LEO MSS Bands is a Critical Component of the Proposed Band Plan

Motorola supports the award of a single license in the 5.15 MHz of spectrum reserved for the FDMA/TDMA technology, and views the exclusive use of this band segment by the IRIDIUM system as an indispensable part of the Commission's spectrum sharing plan. As Motorola has repeatedly emphasized, it cannot possibly share this spectrum with another FDMA/TDMA licensee under any sharing method, including further segmentation of the

band. Motorola is confident that this condition is met by the Commission's plan. The NPRM refers to the "individual system requirement for an FDMA/TDMA system," and to "an FDMA/TDMA system" in the singular as the user of the 5.15 MHz of dedicated bandwidth. NPRM ¶ 32. Such a condition is implicit in the Commission's proposal, which is based on the assumption that "FDMA/TDMA systems must operate on discrete frequencies" while CDMA systems "may share the same bandwidths." NPRM ¶ 31. Indeed, the Commission acknowledges Motorola's assertion that it could not viably share its portion of the band with any other FDMA/TDMA system.<sup>26/</sup> See id.

Motorola further supports the reservation of the upper portion of the LEO MSS Band for the single FDMA/TDMA licensee. This aspect of the Commission's plan is consistent with the allocation for MSS downlinks in the 1613.8-1626.5 MHz band and is required to avoid interference to the Radio Astronomy Service operating in the 1610.6-1613.8 MHz band.

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<sup>26/</sup> Given the requirement of exclusive use of the FDMA/TDMA portion of the band, the Commission cannot accept amendments to the pending applications which would allow another proposed system to operate in the FDMA/TDMA band segment without changes to band segmentation plans to increase the amount of spectrum awarded to FDMA/TDMA systems. Motorola also assumes that Constellation plans to follow through with its decision, repeatedly avowed to the Commission during the course of the negotiated rulemaking, to amend its applications from proposing an FDMA uplink to a CDMA uplink. If Constellation were to alter its position and reconsider this decision now, this would also require a new band-sharing plan.

C. The Proposed Plan Is Within the Commission's Authority and Accomplishes the Commission's Statutory Mandate to Attempt to Avoid Mutual Exclusivity

Subject to the understandings detailed above, the compromises that the proposed sharing plan requires of all applicants are the type of "workable adjustments" that avoids mutual exclusivity and that the Commission may impose without a hearing.

The sharing plan proposed by the Commission entails only relatively minor changes to the applicants' proposed systems. Indeed, the Commission's proposal to assign 11.35 MHz of L-band spectrum to the CDMA applicants is more generous even than the assignment proposed by three of the CDMA applicants in their joint proposal (excluding the proposed reserve spectrum). Specifically, the Commission arrived at the 11.35 MHz CDMA assignment by adjusting downwards from 11.5 MHz, which it assumed as sufficient to accommodate the four CDMA systems. See NPRM ¶ 31. This assumption was in turn derived by adding the 7.5 MHz that TRW, Constellation and Ellipsat requested for assignment to CDMA systems and the 4 MHz that the CDMA systems requested as "reserve" spectrum. See Joint Spectrum Sharing Proposal of TRW/Constellation/ Ellipsat at ii, 2-3 (filed Oct. 8, 1993). Under the Commission's proposal, the CDMA applicants would secure, immediately upon launch, access to more spectrum than even they requested for unconditional assignment.<sup>27/</sup>

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<sup>27/</sup> Accordingly, the segmentation of the band does not, in and of itself, create a mutually exclusive situation since the CDMA applicants concede that they can operate in the remaining spectrum.

In these circumstances, the sharing plan proposed by the Commission is precisely the type of "workable adjustment" that makes it possible to grant all qualified applications and thereby avoid mutual exclusivity. See Ashbacker, 326 U.S. at 332 (comparative hearing requirement imposed where "[n]o suggestion is made . . . that it may be possible to make workable adjustments so that both applications can be granted," citing Matheson Radio Co., 8 F.C.C. 427 (1941), The Evening News Ass'n, 8 F.C.C. 552 (1941)). See also NARUC v. FCC, 525 F.2d 630, 636 (D.C. Cir.) (Court noted that the determination of how much bandwidth to allocate to cellular systems was "at once a highly technical and somewhat speculative undertaking," depending "upon an estimate of the nature and capabilities of technology that is now only partially developed, and upon projected demands for radio telephone service"; the court concluded that "such determinations are precisely the sort that Congress intended to leave to the broad discretion of the Commission, by imposing a broad public convenience, interest, or necessity standard."), cert. denied, 425 U.S. 992 (1976) ("NARUC I").

The changes required of each proposed system as a result of the Commission's band sharing plan still preserve the identity and integrity of all of the Big LEO MSS systems, and do not establish a new licensee, a procedure that was questioned in ARINC. See ARINC, 928 F.2d at 450-51 (expressing skepticism about plan that goes so far as to establish a licensee by rule instead of establishing rules for all licensees). On remand from ARINC, the Commission held that even the creation of a licensee is a permissible exercise of its rulemaking authority, and is

"consistent with [the Commission's] longstanding practice of avoiding administrative hearings in common carrier and satellite licensing proceedings." AMSC Order, 7 FCC Rcd. 266, 269 (1992), aff'd on other grounds, Aeronautical Radio, Inc. v. FCC, 983 F.2d 275 (D.C. Cir. 1993).

D. The FDMA/TDMA Licensee Should Be Entitled to the Same Amount of Spectrum As a Single CDMA Licensee

The NPRM proposes that in the event that only one CDMA system becomes operational, the 3.1 MHz in the 1618.25-1621.35 MHz band "could" be reassigned to the FDMA/TDMA licensee upon a showing of need. See NPRM ¶ 34. If the FDMA/TDMA licensee fails to meet its milestones or to make this showing, the Commission proposes to make this 3.1 MHz available to new entrants. Motorola respectfully submits that the FDMA/TDMA licensee should not be required to make any showing in order to gain access to this spectrum if only one CDMA system becomes operational. Such a reassignment of spectrum should be automatic.

Specifically, this requirement does not treat the FDMA/TDMA licensee on an equal footing with the CDMA licensee if only one CDMA system becomes operational. The single CDMA system will have access to at least 8.25 MHz of spectrum, without being required to make any need showing. Requiring only the FDMA/TDMA licensee to make such a need showing in order to secure access to an equal amount of spectrum would upset the competitive balance and hinder Motorola vis-à-vis the sole CDMA licensee. This handicap would befall Motorola for no other reason than the

failure of other CDMA systems to become operational, an eventuality for which Motorola should bear no responsibility.

There is no question that if Motorola obtains a license and implements its system, it will need the additional 3.1 MHz of L-band spectrum. As the Commission is well aware, Motorola originally applied for 10.5 MHz of spectrum in the L-band for bidirectional operations. While it may be able to begin operations with as little as 5.15 MHz for its subscriber links, Motorola's demand projections far exceed the capacity available from this initial assignment. Thus, Motorola will most assuredly need the extra spectrum if the IRIDIUM system is to continue as an ongoing business and meet the demand it projects through system growth.<sup>28/</sup>

Accordingly, the FDMA/TDMA licensee should be entitled to operate in the entire 1618.25-1626.5 MHz band in the event only one CDMA licensee becomes operational.<sup>29/</sup> To achieve the goal of accommodating new entry, the Commission should explore additional MSS allocations for other would-be MSS providers that may emerge, and should refuse to entertain a solution that is needlessly unfair to the FDMA/TDMA licensee.

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<sup>28/</sup> By comparison, AMSC has been licensed to operate in 30 MHz of L-band spectrum, and concedes that it should be able to operate in about 20 MHz after international coordination. See SEC Form S-1 Registration Statement of American Mobile Satellite Corp., Amendment No. 2 (Dec. 10, 1993), at p. 13.

<sup>29/</sup> In any event, the FDMA/TDMA licensee should be issued a construction permit over the entire 1616-1626.5 MHz band to give it flexibility to operate over a larger band in the event it is allowed to do so in the United States or elsewhere.



E. The Commission Should Implement the Proposed Band Sharing Plan Immediately Upon Licensing, Without Implementing Any Interim or Transitional Plan

Motorola agrees with the Commission's reasoned analysis that the entire 1610-1626.5 MHz band will be available for the Big LEO MSS systems by the time they become operational. There are at least two reasons for not implementing an interim or transitional band sharing plan pending the outcome of international coordination with the Russian Administration over the second generation GLONASS system (GLONASS-M). First, it is highly likely that the Federal Aviation Administration ("FAA") will not authorize that GLONASS be used for aircraft approaches - the interference case which would inhibit MSS operations in the same band as GLONASS. Second, it is also highly likely that the Russian Administration will agree to change the GLONASS frequency plan to operate below 1610 MHz in order to protect RAS sites and successfully complete GLONASS-M coordination. See NPRM ¶¶ 31 n.59, 57. Conversely, the adoption of any interim plan pending the outcome of GLONASS-M coordination could create a disincentive for the Russian Administration to change the GLONASS frequency plan.

1. GLONASS Is Not Believed to be a Part of the Current Plans of the FAA or Other U.S. Aviation Authorities to Augment GPS

At this time, there is no evidence to suggest that the FAA has any concrete plans to use GLONASS for augmenting GPS for precision landings in the U.S. Indeed, there is evidence that GLONASS is not part of the FAA's current plans to implement and